

IBM OS/2 Installation Guide for all Hewlett-Packard NetServers

NOTICE: The information in this document was last updated for the HP NetServer Navigator CD-ROM version E.10.00 or L.16.00. If you don't have the E.10.00 or L.16.00 version CD-ROM and you're obtaining this document from the HP NetServer web site as a reference to install an operating system, be sure to also check the HP NetServer web site for the latest available drivers.

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(This document is only available in English.)

Introduction

The objective of this document is to help Hewlett-Packard customers install OS/2 on a HP NetServer system. For additional information on Hewlett-Packard NetServers refer to the HP Information Assistant on the HP NetServer Navigator CD-ROM.

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Before You Begin

It is critical to know which disk adapters or disk array adapter is in the system before you start the installation. The following table will help you identify what adapter is implemented or embedded on the system board for each HP NetServer. If you add any additional disk adapter, please note it on this table for planning purposes.

NOTE: The IBM OS/2 operating systems are **not** supported on the HP NetServer E series (E 30, E 40, E 45, E 50, and E 60).

Table 1a

	Number of	Driver Path on Drivers	SCSI
NetServer	Channels	Diskette	Driver Name
LX	2	\7800	AIC7870.ADD

LS	2	\7800	AIC7870.ADD
LH Pro	2	\7800	AIC7870.ADD
LH	2	\7800	AIC7870.ADD
LD Pro	1	\7800	AIC7870.ADD
LC	1	\7700	AIC7770.ADD
LC 2000	2	\SYM897	SYM_HI.ADD
LF	2	\7700	AIC7770.ADD
LM	2	\7700	AIC7770.ADD
LE	1	NA	
E 40	1	\7800	AIC7870.ADD
E 45	1	\7800	AIC7870.ADD
E 50	1	\7800	AIC7870.ADD
E 60	2	\7800	AIC7870.ADD
LPr	1	\sym895	SYM8XX.ADD
LH 3	1	\sym895	SYM8XX.ADD
LH 4	1	\sym895	SYM8XX.ADD
LH 3000	2	\SYM896	SYM_HI.ADD
"	1	\7800	AIC7870.ADD

Table 1b

	Driver Path on Navigator	SCSI
NetServer	CD-ROM	Driver Name
LX	\periph\adp7800\os2\7800	AIC7870.ADD
LS	\periph\adp7800\os2\7800	AIC7870.ADD
LH Pro	\periph\adp7800\os2\7800	AIC7870.ADD
LH	\periph\adp7800\os2\7800	AIC7870.ADD
LD Pro	\periph\adp7800\os2\7800	AIC7870.ADD
LC	\periph\adp7700\os2\7700	AIC7770.ADD
LC II	\periph\adp7800\os2\7800\ver2.1	AIC7870.ADD
LF	\periph\adp7700\os2\7700	AIC7770.ADD
LM	\periph\adp7700\os2\7700	AIC7770.ADD
LE	NA	AHA152X.ADD
E 40	\periph\adp7800\os2\7800	AIC7800.ADD
E 45	\periph\adp7800\os2\7800\ver2.1	AIC7800.ADD
E 50	\periph\adp7800\os2\7800\ver2.1	AIC7800.ADD
E 60	\periph\adp7800\os2\AIC7870.ADD	
LPr	\periph\adp7800\os2\sym8xx\ver406	SYM8XX.ADD
LH 3	\periph\adp7800\os2\sym8xx\ver406	SYM8XX.ADD
LH 4	\periph\adp7800\os2\sym8xx\ver406	SYM8XX.ADD

Section 1. Installation Tips and Considerations

Tip 1) Extended Translation Setting

Enable "Extended Translation for Drives > 1 GB" in the SCSI-Select utility. To access SCSI-Select, press Ctrl-A as soon as the Adaptec banner appears while the system is booting. You can also set this option by using the ECU utility in the advanced mode.

Tip 2) Extending Disk Capacity Beyond 1 GB

For the D2078A/B EISA Fast SCSI-2 Host Adapter, you must enable the extended SCSI translation feature (support for drives >1 GB) for hard drives with capacities greater than 1 GB, including the HP D2077A 2 GB Fast SCSI-2 hard drive. Extended SCSI translation uses the

logical parameters of 255 heads and 63 sectors to support drives up to about 8 GB in capacity. Standard SCSI translation, with 64 heads and 32 sectors, is limited to a maximum capacity of 1024 MB (1 GB). You can enable Extended SCSI translation in the BIOS Configuration section of the EISA Configuration Utility options for the D2078A/B EISA Fast SCSI-2 Host Adapter.

This information also holds true for the embedded AIC7870 SCSI Host Adapter.

Tip 3) Formatting Disk Partitions Larger than 2 GB

If you need to format a disk partition larger than 2 GB, use the HPFS file system. Disk partitions formatted with the FAT file system (also used by DOS) cannot exceed 2048 MB (2 GB), while HPFS file system partitions can be as large as 64 GB.

NOTE: Boot drive partitions must be less than or equal to 2 GB, whether you use FAT or HPFS.

On a hot-swap drive connected to an Adaptec 2940 SCSI adapter, a partition larger than 1024MB cannot be formatted using the FAT file system. You should either connect hot-swap drives to an embedded SCSI channel, or create smaller partitions when using the FAT file system.

Tip 4) Device Allocation under OS/2

If you install two device drivers (each using a different device manager) that attempt to access the same device at the same time, a sharing conflict may result. The OS/2 SCSI device manager, OS2SCSI.DMD, allocates a device at the drivers' request. Because there is nothing in the ASPI specification regarding device allocation, OS2ASPI.DMD relies on other device managers to share devices fairly. Allocation by OS2SCSI.DMD may prevent OS2ASPI.DMD from accessing the device. For example, a problem could arise if a tape application using OS2SCSI.DMD and another tape application using OS2ASPI.DMD attempt to access the tape at the same time.

Tip 5) RAM Greater Than 192 MB

In systems with more than 192 MB of RAM, a Trap E may occur during boot after LAN Services is installed. To avoid this problem, do not select auto cache size for the HPFS file system during installation of LAN Services. HP recommends an HPFS cache size of 16 MB or less.

If this problem persists, boot from the OS/2 installation diskettes, exit to a command prompt, and edit the CONFIG.SYS file. (You may have to copy the CONFIG.SYS file to a floppy disk, edit it on another system, and then copy it back.) Ensure that the line starting with **IFS=** near the beginning of the file contains the parameter **/C:16000**. An alternative is to remove RAM so that the system has less than 192 MB, reboot and reconfigure LAN Services, and then shut down and reinstall the RAM.

Tip 6) Performance Tuning

IBM publishes a performance White Paper, *OS/2 2.1 Performance Tuning for End Users*, that

provides information on improving the performance of OS/2 systems. Contact IBM for more details.

Tip 7) Troubleshooting System Hangs When Loading CONFIG.SYS

Reboot the system. When the "OS/2" prompt appears in white text at the upper left portion of the screen, press the Alt and F2 keys simultaneously. Read the driver name on the bottom of the display as they are loaded. The last driver displayed may be the one causing the system hang. Try booting from diskette to edit CONFIG.SYS and remark out (using REM) the suspect driver.

Tip 8) OS/2 Warp Server Installation Issues

If you are installing OS/2 Warp Server, you may see one or more of the following messages while the system is rebooting during installation. If so, follow the instructions below to complete the installation of OS/2 Warp Server.

Issue 1: The CD-ROM drive is not readable.

Fix: Add the following line to the CONFIG.SYS file on the drive on which OS/2 Warp Server is being installed:

```
IFS=x:\CDFS.IFS /Q
```

where *x* is the drive where OS/2 is being installed.

Issue 2: The system cannot create the DOS environment because of a faulty video driver.

Fix: Add the following line to the CONFIG.SYS file on the drive where OS/2 Warp Server is being installed:

```
DEVICE=x:\OS2\MDOS\VVGA.SYS
```

where *x* is the drive where OS/2 is being installed.

Issue 3: A Trap D occurs in device driver SINGLEQ\$.

Fix: Reboot the system. When the "OS/2" prompt appears in white text at the upper left portion of the screen, press the Alt and F1 keys simultaneously. A screen of options appears. Press the <v> key to reset the video to VGA mode. The system will reboot automatically.

Issue 4: System hangs during loading CONFIG.SYS

Troubleshooting process: Reboot the system. When the "OS/2" prompt appears in white text at the upper left portion of the screen, press the Alt and F2 keys simultaneously. OS/2 will display the driver that has been loaded at the bottom of the screen. This will help you identify the last driver loaded when the system hangs. You can remark the suspect driver to isolate the reason for the system hang.

Issue 5: System hangs with a GUI display indicating that system configuration is being updated.

Fix: This is caused by the wrong AIC7870.ADD driver. It is possible that you skipped one of the steps where the driver and CONFIG.SYS are updated either manually or by using the UPDATE.EXE utility.

Issue 6: After the first auto-reboot during the file and print installation section the system may stop with an error when loading drivers in CONFIG.SYS the error will read like this "Invalid path specified in line xy c:\cid\...".

Fix: This error usually occurs because the CD-ROM driver is not present in CONFIG.SYS. Reboot the system. When the white box appears in at the upper left portion of the screen, press Alt and F1 keys simultaneously. A screen of options appears. Press the <c> key to boot the system to the command prompt. Edit CONFIG.SYS and add the embedded SCSI driver to enable the CD-ROM for example:

```
BASEDEV=AIC7870.ADD
```

Issue 7: After Installing OS/2 2.11 for SMP on a Hewlett-Packard NetServer LS the system hangs and traps intermittently.

Fix: If you have a dual-processor card installed, edit the CONFIG.SYS file on the root directory of the hard drive where OS/2 is installed. (Note that this only applies to systems with a dual processor card installed.) Change the line:

```
PSD=OS2APIC.PSD
```

to:

```
PSD=OS2APIC.PSD /APIC
```

Issue 8: After completing the OS/2 installation on a NetServer E40, the CD-ROM can not be accessed by the system. Also, when you open the Drives object folder the CD-ROM object is not present.

It is possible that during installation you did not select "Non-Listed IDE CD-ROM" as recommended in the installation procedure. You can resolve this issue by editing CONFIG.SYS to add the following line and then rebooting the system.

```
BASEDEV=IBMIDECD.FLT
```

Tip 9) How to View the Resources Used by an Adapter

The Navigator CD-ROM version G.00.10 or greater has a utility that will display the resources used by an adapter. Use the following procedure to get the resource listing:

- 1) Boot Navigator CD-ROM
- 2) Select "Configuration Assistant"
- 3) Select "Custom Configuration"

- 4) Select "IBM OS/2"
- 5) Select "Warp Family"
- 6) Select "Continue"
- 7) Select "Show Configured Card"
- 8) Select "View Resources" It shows a table with the following column headings:

SLOT	IRQ	DMA	MEMORY	I/O PORTS
- 9) Select "Save to Disk" note that there is no printer support for the Navigator
- 10) Select "Continue"
- 11) Select "Continue"
- 12) Select "Exit"
- 13) Print the information saved to diskette in step 9 if you want a hard copy

Tip 10) How to Run the HPVGSET.EXE Utility from the Navigator CD-ROM

To run the HPVGSET.EXE utility from diskette you must create a driver diskette from the Navigator diskette library section. Boot PC to DOS and type:

hpvgset.exe

- 1) Boot Navigator CD-ROM
- 2) Select "Configuration Assistant"
- 3) Select "Custom Configuration"
- 4) Select "IBM OS/2"
- 5) Select "Warp Family"
- 6) Select "Continue"
- 7) Select "Execute Card Utilities"
- 8) Select "Exit" when done.

Tip 11) 4GB RAM support in OS/2

Warp Server SMP 4.0 is the only version of IBM OS/2 that supports 4GB of RAM.

Warp Server 4.0 works fine with a max of 1GB. We experienced system hangs at the Warp red logo when booting a NetServer LX with 4GB RAM running Warp Server 4.0

Tip 12) HPFS386 Drive cache size issue on systems with 4GB RAM

The installation procedure of IBM OS/2 defaults to calculating the disk cache size based on the amount of memory installed on your system. It appears that this calculation does not work properly when the system has a 4GB of RAM installed. In this case the disk cache is set to the lowest value of 256K. Hewlett-Packard reported this issue to IBM. As a workaround you can edit the file C:\IBM386FS\HPFS386.INI. Locate the line that reads "cachesize=256". This means that the cache is set to 256K bytes. You can read the text provided below this line to determine which is the best value to use. Please keep in mind that this parameter will impact your system performance.

Tip 13) When using HP NetRAID install the driver MRAID.ADD

If you are using a HP NetRAID it is possible to complete the installation of OS/2 using the IBM IBMINT13.I13 driver provided on the Diskette1. This generic driver has limitations on the number of drives and on the maximum drive size that it can handle. For example in our test IBMINT13.I13 showed a limit of 8 drives and a maximum drive size of 8Megabyte.

Tip 14) Getting Trap 00D when booting OS/2

We have observed situations where these traps during system boot are caused by a device driver. The following is a list of things to check:

1) Verify that you don't have a duplicate driver name in your config.sys. For example the HPDA.ADD driver is provided by IBM in the OS/2 CDROM under the name DAC960.ADD. Hewlett Packard recommends that you use the HPDA.ADD driver unless there is a specific reason why you must use the DAC960.ADD driver.

2) If you are using the Netfinity server management tools it installs a driver called NFDASD.FLT. The Hewlett Packard NetRAID driver MRAID.ADD version 1.06 (date: 11/05/96 size: 24430) has a compatibility issue with the NFDASD.FLT driver. The new driver MRAID.ADD version 1.07 (date: 1/30/97 size: 24624) resolved this problem. There are two ways to verify if this old driver is causing your problem. (a) Place a Remark in front of the NFDASD.FLT driver. (b) Replace the MRAID.ADD driver with the IBMINT13.I13 driver. If one of these two steps resolves the Trap D while booting then obtain the new MRAID.ADD driver immediately.

Tip 15) Getting Trap 008 during extensive disk/network I/O

It is possible to experience intermittent Trap 008 during extensive disk/network data transfer when using the following configurations:

Configuration #1:

Four NIC's of any topology

Two HP NetRAID disk array cards with drives connected to all three ports

Configuration #2:

Four HP NetRAID disk array cards

Two NIC's

To resolve this issue ServicePack 29 is required. You can obtain this update by contacting your IBM representative.

Tip 16) Specific to E Series NetServers: How to boot from a NetRAID adapter while a 2910Bui SCSI card is present on the system

The following steps are involved during system boot to install boot partition on NetRAID adapter disk arrays.

1. Disable Host Adapter BIOS by using <Ctrl A> during boot-up. Host Adapter BIOS settings are within SCSI Select utility -> Advanced Control Options.
2. Apply consideration number one listed below to keep the appropriate boot order.

Tip 17) IRQ Sharing can cause system hangs

Avoid sharing IRQ's between NICS, between HBA and DAC to avoid hang problems caused during heavy system usage.

Tip 18) Adaptec driver AIC7870.ADD 133496 12-Jan-1998 or later is required for 2940UW with rev B chip set

We have seen intermittent hangs caused by the AIC7870.ADD driver. The problem can happen with any version of the Adaptec adapter that uses this driver. However, the problem is more pronounced with an Adapter that has Rev B of the 7870 chip. Hewlett Packard recommends that you use the driver dated 12-Jan-1998 or later.

Tip 19) Configuring IDE drives as boot device

When installing an IDE drive on your E series NetServer you must follow the following notes.

1. You must order an IDE cable 5183-2103 which is not included with the system.
2. The IDE drive must be the boot drive.
3. The boot partition must be less than 2GB.
4. It is possible to install a boot-manager utility on the IDE drive and the target NOS on a SCSI drive.
5. When Installing OS/2 on a Quantum 4.3GB (Fireball) drive the drive capacity reported by FDISK is 57MB. IBM is aware of this issue. Please contact IBM's web site for a driver update. This issue was experienced with driver IBM1S506.ADD 54326 26-Jan-1996.

6. The default IDE configuration is usually set to automatic which reports the following parameters:

```
Cyl = 14848  
Head = 9  
Sector = 63
```

Workaround: Run setup to apply the following IDE configuration values:

```
Cyl = 8174  
Head = 16  
Sector = 63
```

Final Fix: Contact IBM or connect to the following web site to obtain the new IBM IDE driver:

http://service.software.ibm.com/os2ddpak/html/os_2comp/

Tip 20) NetServer LPr, LH 3 and LH 4 CD-ROM must be configured as "Non-Listed IDE CD-ROM"

When installing OS/2 Warp Server make sure you configure the CD-ROM as "Non Listed IDE". Otherwise you may experience system hangs after the second reboot during the installation process. Also, see issue number seven listed above.

Tip 21) NetServer LH 3 Embedded SCSI and Raid Adapter Configuration

The Hewlett Packard NetServer LH 3 can be configured to use either SYM8XX.ADD or MRAID.ADD or both concurrently. See Tip 13 listed above and Consideration 3 listed below for information related to installing OS/2. Consult the NetServer user's guide for information on how to configure the embedded SCSI or Raid ports.

Tip 22) Installing Multiple D5013 NICs

If you are installing more than one PCI adapter:

1. Complete the configuration process with the MPTS configuration utility, but leave the Slot field blank for each driver;
2. Restart the system and record the list of Slots that each driver displays;
3. Complete the configuration by assigning one of the values from the list to the Slot parameter of each driver. Leave the field blank if you have only one adapter installed.

Tip 23) "Unable to Access the Hard Drive" error during the OS/2 installation. (Also, see Tip #24)

This error usually occurs due to one of the following reasons.

1. The basedev stament for the target driver is not present in config.sys.
2. The target disk driver is not present on diskette one. For example there is a new Adaptec driver aic7870.add required for new systems that support Ultra Wide SCSI like in the NetServer E 60. In this case you must replace the original driver on the diskette #1 with the aic7870.add driver provided on the Navigator CD-ROM (See the section called "Creating the Driver's Diskette" listed above.).
3. Even after you apply the proper driver as listed on step 2, the installation can fail with the "Unable to access hard drive" error message after the first or second reboot. This happens because the installer copies the old driver from the OS/2 CD-ROM to the hard drive. To address this problem you must either boot from diskette or use the F3 or (Alt-F1) key to get to the command prompt. Next copy the new driver to the boot drive. Please note that this driver must be copied to the root and to the \os2\boot directory. For example:

```
a:> copy a:\aic780.add c:\aic7870.add  
a:> copy a:\aic7870.add c:\os2\boot\aic7870.add
```

Tip 24) IBM's Recommended Procedure Installing OS/2 with New AIC78XX.ADD

Follow this Warp Connect and Warp V4 procedure for installing OS/2 whenever the *Adaptec 7800 Family Manager Set v2.1 for OS/2* driver is required for the boot drive.

1. Type cdinst from CDROM drive to create the boot diskettes.
2. Remove the following files from Disk 1

```
aha152x.add  
aha154x.add  
aha164x.add  
aha174x.add  
aic7770.add  
aic7870.add
```

3. Rename the new Adaptec driver to AICNEW.ADD and copy to Disk 1.
4. **Note:** Follow this step only if installing Warp V4
Remove the file called bundle from Disk 2 and copy aicnew.add to Disk 2.
5. Edit config.sys (In Disk 1) and remark out the basedev statements for all of the above deleted drivers.

6. Add a new Basedev statement in config.sys

BASEDEV=AICNEW.ADD

7. In config.sys make sure the following statement is present

SET SAVECONNECT=1

By default, this statement is inserted by cdinst.

8. At the end of installation, aicnew.add gets copied to the root partition of the boot drive, and the config.sys will have a corresponding BASEDEV statement. You can choose to copy this driver to the c:\os2\boot directory. Do not rename this driver back to AIC7870.ADD.

Reference:

<http://service.software.ibm.com/os2ddpak/html/FCF6C3F9EF462CCC86256449006F9599.html>

Tip 25) NetServer E 60 - Fixpak 40 Required for Memory Dump Functionality

The Fixpak 40 is required to be able to take a memory dump on the E 60 running Warp Server SMP 4.0. If you don't apply this fixpack the system will hang with a character mode display indicating that a memory dump will be taken. To recover from this mode you have to power off and on.

Considerations

Before installing OS/2 you must keep in mind the following considerations

Consideration 1: Choose the Booting Controller

If you are using multiple disc controllers it is important to determine which is going to be the boot controller since OS/2 uses the order or sequence of the "BASEDEV= xxxx.yyy" driver definition statement in CONFIG.SYS to determine the drive letter assignment. The first BASEDEV declared in CONFIG.SYS will be assigned to the boot drive. For clarity purpose it helps to place the "BASEDEV= xxxx.yyy at the beginning of CONFIG.SYS. It is recommended that you remove the IBMINT13.I13 from config.sys when using NetRaid or SCSI drivers.

It is also important to pay attention to system specific boot ordering. Many systems bios setup programs allow the user to set the boot priority of the disk controller(s).

NOTE: You must create a partition < 2GB for the boot drive. (See Tip 3)

Please complete the following table for planning purposes:

Table 2a

Adapter	Driver Name	Driver
		Provider

Embedded Adaptec	AIC7870.ADD	HP
Adaptec 2740A	AIC7770.ADD	HP
Embedded IDE	IBM1S506.ADD	IBM
HP DAC Adapter	HPDA.ADD	HP
HP NetRAID	MRAID.ADD	HP
HP Symbios	SYM8XX.ADD	HP
Embedded NetRAID	MRAID.ADD	HP
Other	NAME.ADD	

Table 2b

Adapter	Boot Adapter (YES/NO)	BOOT Drive Size XMbytes and Notes
Embedded Adaptec		
Adaptec 2740A		
Embedded IDE		
HP DAC Adapter		
HP NetRAID		
Other		

NOTE: When you are configuring the hardware, make sure that the booting controller will take precedence over any other devices that may be bootable. Both the User Guide for your NetServer and the Installation Road Map contain lists showing the boot device priorities for all of the slots and embedded controllers in the system. The hardware and the operating system must agree as to which controller is the booting controller.

Consideration 2: Selecting the Boot Drive Capacity

If you are installing OS/2 onto a drive connected to a Disk Array Adapter (for example the HP DAC or HP NetRAID) or connected to a very large hard drive, you should create a logical disk smaller than 2047 MB on which you will install OS/2. While running the Navigator utility during system configuration. You can run the appropriate utility to setup the disk array adapter. The disk array setup utilities are JetSet for the HP DAC and the "NetRAID Assistant" for the HP NetRAID. These utilities will help you set logical disk sizes in the Disk Array configuration process.

To ensure that the OS/2 boot partition is not larger than 2047 MB, create at least two logical drives with the disk array setup utility. Create the first logical drive to less than or equal to 2047 and the second for the rest of the available space. Install OS/2 on the first logical drive, and use the other logical drive(s) for all applications and data.

If OS/2 must be added to an existing logical drive configuration of the disk array, use FDISK during OS/2 installation to create an installable partition within the first 2GB of an existing logical drive. Use the other partition(s) for applications and data. You can use this same procedure to partition a large drive when installing OS/2 to a large drive connected to the embedded SCSI.

Consideration 3: Choosing the Boot Drive ID off Embedded Adaptec SCSI

If you are installing OS/2 onto a drive connected to the embedded Adaptec SCSI controller or a non-disk array SCSI adapter, make sure that the drive has the lowest SCSI ID, or install Boot

Manager on the drive with the lowest SCSI ID. The system will boot from the drive with the lowest SCSI address among the drives connected to the first controller in the boot order. HP recommends SCSI ID 0 for the boot drive. If you configure the boot drive with another SCSI ID, your system may not boot when additional SCSI drives are installed later.

Section 2. Creating the HP Drivers/Utilities Diskette

The "Drivers/Utilities" diskette is referred to in the HP NetServer Navigator CD-ROM and other HP documentation as the "Drivers Diskette." The purpose of this diskette is to accomplish the following three tasks:

Task 1) To backup one (or more) of your OS/2 installation diskettes. For OS/2 Warp and later products, only Diskette 1 is backed up. We will refer to this backup copy of OS/2 Diskette 1 as the "Work Diskette 1". When you install OS/2, you will use the backup copies in place of the original diskettes that came in the OS/2 box.

Task 2) Identify the unused drivers on "Work Diskette 1" to make room for new drivers. Delete the unwanted drivers from the "Work Diskette 1".

Task 3) Identify the required drivers for the system. Based on the boot setup the following drivers may be needed. Example:

AIC7870.add
SYM8xx.ADD
MRAID.ADD
AIC78U2.ADD

Make a list of drivers that are needed and order them based on boot priority.

Task 4) Create HP Drivers/Utility Diskette by stepping through one of the following procedures. There are two ways to create the drivers diskette.

- **Procedure One:** Uses the OS/NOS icon section of the Navigator CDROM.
- **Procedure Two:** Uses the "Library diskette" section of the Navigator CDROM.

NOTE: Starting March 1997 the OS/2 drivers were split into two diskettes as follows.
Diskette #1: Contains the SCSI - DAC drivers and utility. Diskette #2: Contains the NIC drivers.

Procedure One

1. Boot with the HP Navigator CD-ROM.
2. From the Main Menu, select "Configuration Assistant".
3. Select Custom.

4. Select OS/2.
5. From the menu, select the version of OS/2 that you want to Install. Select "Warp 3.0" for any version of Warp that you want to install. (Starting with Navigator CD-ROM version G.00.10 this selection button is called "Warp Family".
6. Read the information provide on the "Configuration Advisor" panel. Save it to disk if you desire.
7. Select Continue.
8. From the "Custom Configuration" menu select "Create Drivers Diskette".

Starting March 1997 the OS/2 drivers were split into two diskettes as follows.

Diskette #1: Contains the SCSI - DAC drivers and utility.

Diskette #2: Contains the NIC drivers.

To create the Driver Diskettes:

- A) Select "COPY ALL" to create the two driver diskettes.
 - B) Insert Diskette when prompted and follow the instructions.
 - C) Click exit when done.
 - D) Click Yes, to reboot the system
9. Label a blank diskette "HP NetServer IBM OS/2 Warp Drivers/Utilities Diskette". Insert this diskette in drive A and select "Execute".
 10. Remove the HP Navigator CD-ROM. Keep the newly created "Drivers/Utilities" diskette in the floppy drive.
 11. Click on Exit. Select Yes to reboot system. Continue to **Task 5**.

Procedure Two

This is an alternate procedure for Creating the "Drivers/Utilities" diskette using a section called "Diskette Library" on the Navigator CDROM.

The following example lists the steps required to create the two drivers diskette for a NetServer E 40. The same steps apply to other models.

NOTE: Starting March 1997 the OS/2 drivers were split into two diskettes. Diskette #1: Contains the SCSI - DAC drivers and utility. Diskette #2: Contains the NIC drivers

Keep in mind that if you need high resolution video, you will need to create a third video driver's diskette.

Use this procedure to create a "Drivers/Utilities" diskette using the "Diskette Library" on the Navigator CDROM:

1. Boot Navigator
2. Click. NetServer Utilities
3. Click, More Utilities
4. Click, Diskette Libraries
5. Select "NOS Drivers - OS/2 Warp Family" and then click execute (see the following note).

NOTE: Only "OS/2 Warp Family" is supported on the E40. There is no OS/2 2.11 support for the E40.

6. Select "COPY ALL" to create the two driver diskettes. If you wish to make only one diskette just select the one you need from the list provided on the screen. You can create the video driver by selecting video from the list provided on the screen.
7. Insert Diskette when prompted and follow the instructions.
8. If needed, create the video driver by following the same procedure.
9. Click exit when done.
10. Click Yes, to reboot the system. Continue to **Task 5**.

Task 5) Copy the required drivers (which are identified in Task3) from "HP Diskette #1: SCSI - DAC drivers and utility" to the "Work Diskette 1".

Task 6) Edit Config.sys file in "Work Diskette 1" to include the drivers entry which are added in Task 5 and delete drivers entry which are removed in Task 2.

Task 7) Include "set copyfromfloppy=1" as the first line in config.sys in "Work Diskette 1" to allow the installation process to copy drivers from floppy than from OS/2 Installation CDROM.

Section 3. OS/2 CD-ROM Installation Procedures

Be sure to check the considerations and tips listed above before starting the installation process. Also, complete the planning table listed in "Consideration 1".

Note that this document was written using the Adaptec driver AIC7870.ADD. However if your system uses a different SCSI driver, just use your driver name in place of the one listed in this document. For example, since the HP NetServer LC uses the AIC7770.ADD driver, you must replace the AIC7870.ADD driver entry with AIC7770.ADD everywhere in this document.

On the following pages you will find separate procedures for:

- Installing OS/2 Warp 3.0, OS/2 Warp Connect 3.0 and Warp Server 4.0
- Installing OS/2 2.11 for SMP
- Installing Service Pack S.631 (or later) manufacturing refresh for OS/2 2.11 for SMP

Installing Warp 3.0 or Warp Conn. 3.0 or Warp Server 4.0

Overview for Installing Warp and Warp Connect

If you are an experienced OS/2 user you can follow this overview to complete the product installation. However Hewlett-Packard recommends that you follow the detailed step by step process to complete the installation. The installation process for Warp 3.0, Warp Connect 3.0 or Warp Server 4.0 consists of five phases.

Please read the information provided in Section 1 of this document before starting the installation.

Phase 1: Create copy of IBM "Diskette 1" label it "Work Diskette 1"

1. Create the Drivers/Utilities diskette using the HP Navigator CD-ROM. (See "Section 2" of this document.)
2. Create a copy of IBM "Diskette 1" and label it "Work Diskette 1".

Phase 2: On "Work Diskette 1" update CONFIG.SYS and copy new drivers

3. Edit CONFIG.SYS on "Work Diskette 1" to add the HP SCSI and driver for disk array adapter if one is present.
4. Copy required drivers to "Work Diskette 1".

Phase 3: Start Installation

5. Start installation of OS/2 using IBM "Installation" Diskette and the IBM OS/2 CD-ROM.
6. Insert "Work Diskette 1" when prompted for IBM Diskette 1.
7. Continue the Installation process as suggested on the Install screen.

Detailed Procedure for Installing Warp 3.0, Warp Conn. & Warp Server 4.0

NOTE: If you completed all the steps listed above in "Section 2," then you can skip Phase 1 and 2 listed below. You can go to Phase 3, step 5.

Introduction

In this section you will see some steps that precede a section called "Manual Process". The intent is that if you run into any errors or issues with the automatic / utility procedure you can try using the "Manual Process" to circumvent any issues or to troubleshoot the error. Also if you are a

power user, it is OK to use the "Manual Process" to complete the installation.

Phase 1: Create copy of IBM "Diskette 1" label it "Work Diskette 1"

1. Create the Drivers/Utilities diskette using the HP Navigator CD-ROM.

Follow the steps described in "Section 2" of this document.

2. Create a copy of IBM "Diskette 1" and label it "Work Diskette 1".

Follow the Step by Step procedure described in Section 2 of this document.

Manual Process:

You can also use a spare PC running DOS, OS/2 or NT to make a copy of the original IBM Diskette. Label your copy diskette "Work Diskette 1". Insert master IBM "Diskette 1" in drive A and enter the following command:

DISKCOPY A: A:

Phase 2: On "Work Diskette 1" update CONFIG.SYS and copy new drivers

3. Edit CONFIG.SYS on "Work Diskette 1" to add the HP SCSI and driver for disk array adapter if one is present.

Follow the step-by-step procedure described in Section 2 of this document.

Manual Process:

You can also use a spare PC running DOS, OS/2 or NT to complete the following tasks. Please read "Consideration 1" in Section 1 of this document and complete the table in that section before you proceed with this step.

A) If you have an HP DAC, add three lines to the start of CONFIG.SYS as follows:

```
basedev=ibm1s506.add  
basedev=hpda.add  
basedev=aic7870.add
```

If you have an HP NetRAID, add three lines to the start of CONFIG.SYS as follows:

```
basedev=ibm1s506.add  
basedev=mraid.add  
basedev=aic7870.add
```

B) While editing CONFIG.SYS locate and delete any lines that look like the one's you've

already added which are calling the same drivers. You don't want duplicate driver names. This can cause Trap 00D or Trap 00E during the OS/2 boot process.

C) While editing CONFIG.SYS on the "Work Diskette 1". Locate the section with all the IBM type 2 drivers, they will read as follows...

```
basedev=ibm2flpy.add  
basedev=ibm2adsk.add  
basedev=ibm2scsi.add
```

You will need to remark out these lines by adding the REM command so they read as follows...

```
REM basedev=ibm2flpy.add  
REM basedev=ibm2adsk.add  
REM basedev=ibm2scsi.add
```

D) While editing CONFIG.SYS file, locate the Adaptec drivers section with the following Adaptec driver lines:

```
basedev=aha154x.add  
basedev=aha164x.add  
basedev=aha174x.add
```

You will need to remark out these lines by adding the REM command so they read as follows...(make sure you have no need for any of these drivers before implementing this step).

```
rem basedev=aha154x.add  
rem basedev=aha164x.add  
rem basedev=aha174x.add
```

4. Copy required drivers to "Work Diskette 1"

Follow the Step by Step procedure described in Section 2 of this document.

Manual process:

You can also use a spare PC running DOS, OS/2, or NT to complete the following tasks:

A) Create a temporary directory on the hard disk of the workstation you are using, by entering the following commands (if you created the C:\HPTEMP directory in step 13 of "Section 2" then skip the MD HPTEMP command):

C:

MD HPTEMP
CD HPTEMP

B) Insert the "Drivers/Utilities" diskette in drive A of the workstation, and enter the following copy commands:

COPY A:\7800\AIC7870.ADD
COPY A:\7700\AIC7770.ADD
COPY A:\HPDA\HPDA.ADD
COPY A:\NETRAID\MRAID.ADD
COPY A:\UPDATE.EXE

C) Remove the Drivers Diskette from drive A, and insert the "Work Diskette 1". Delete the following files to make room on "Work Diskette 1" for new drivers by entering the following commands:

DEL IBM2FLPY.ADD
DEL IBM2ADSK.ADD
DEL IBM2SCSI.ADD
DEL AHA*.ADD

Copy new drivers to "Work Diskette 1," by entering the following command:

COPY *.* A:

You may delete all the files in the C:\HPTEMP directory and also delete the C:\TEMP directory.

Now you are ready to start the OS/2 Installation.

Phase 3: Start Installation

5. Start installation of OS/2 using IBM "Installation" Diskette.

To begin installing OS/2 Warp or OS/2 Warp Connect, place the Installation Diskette in drive A, insert the IBM OS/2 CD-ROM and boot the system.

6. Insert "Work Diskette 1" when prompted for IBM Diskette 1.

When you are prompted to insert Diskette 1 and press Enter, insert the copy of "Work Diskette 1" created with the Drivers/Utility diskette, then press Enter. An OS/2 logo appears, and after some time you will see a screen titled "Welcome to OS/2". Press Enter again to continue.

Select "Advanced Installation" if you want to partition your drives. Follow the prompts to create partitions as needed.

Select "Accept the drive."

NOTE: If you change the partition information, you will be prompted to reboot. In this case, repeat steps 5 and 6.

Highlight "Format Partition" when you have chosen an installation partition. Format the partition with the file system of your choice (FAT or HPFS).

Phase 4: First Reboot

7. **This step is a must do for the LS, LX.** See Table 3 in "Section 2". You can skip it for any other model by doing what the OS/2 installation program is requesting on the display and go to step 9.

DO NOT REBOOT THE SYSTEM when you see the blue screen prompting you to either press Enter to reboot or press F3 to select command prompt.

On the first reboot screen, when you are prompted to press Enter to reboot or press F3 to go to the command prompt. You need to press F3 to go to the command prompt. Make sure the drive letter shown at the prompt corresponds to the drive where OS/2 is being installed. Also, make sure the "Work Diskette 1" is in drive A.

8. **This step is a must do for the LS, LX.** See Table 3 in "Section 2". You can skip it for any other model by doing what the OS/2 installation program is requesting on the display and go to step 9.

Edit CONFIG.SYS to add the HP SCSI and Disk Array drivers if they are not currently present. Enter:

A: \UPDATE

Manual Process:

You can also use a spare PC running DOS, OS/2 or NT to complete the following tasks. Please read "Consideration 1" in "Section 1" of this document and complete the "Table 1" in "Section 1" before you proceed with the next step.

A) If you have an HP DAC verify that the following drivers are present in CONFIG.SYS. If they are not present you must add them. Please keep in mind the order of drivers as listed in Section 2.

```
basedev=hpda.add  
basedev=aic7870.add
```

B) If you have an HP NetRAID, or if you don't have any disk array installed, verify that the

following driver is present in CONFIG.SYS:

```
basedev=mraid.add  
basedev=aic7870.add
```

9. Complete the OS/2 Installation GUI screen. Select VGA for the video driver. Do not change the SCSI configuration.

Remove the Work Diskette from drive A, and press Enter to reboot the machine and continue with OS/2 installation.

CAUTION: At the System Configuration Screen, the SCSI Adapter selection may read "none". In this case, do not select a controller from the pull-down menu. The UPDATE.EXE utility will add the correct driver in step 11.

OS/2 will boot to the System Configuration Screen. It is important that you set the video display configuration to VGA and that you leave the SCSI Adapter configuration to "None". The other configuration parameters can be set to what you think is appropriate for your system.

10. If you are installing Warp Connect select "NO" to install networking products. They can be installed later after the base product is completely up and running. **If you are installing Warp Server 4.0 go to step 13.**

Phase 5: Second Reboot

11. **This step is a must do for the LS, LX.** See Table 3 in "Section 2". You can skip it for any other model by doing what the OS/2 installation program is requesting on the display and go to step 13.

DON'T REBOOT THE SYSTEM when the installation completes.

A) **This step is a must do for the LS, LX.** See Table 3 in "Section 2". You can skip it for any other model by doing what the OS/2 installation program is requesting on the display and go to step 13.

After OS/2 Installation finishes and you are prompted to click OK to reboot, do NOT reboot. Using the mouse, open the System Folder. Open the Command Prompts Folder. Start an OS/2 Full Screen session. Make sure the drive letter shown at the prompt corresponds to the drive where OS/2 is being installed.

Insert the Work Diskette in drive A and enter:

A: \UPDATE

Manual Process:

B) If you have an HP DAC verify that the following drivers are present in CONFIG.SYS. If they are not present you must add them. Please keep in mind the order of drivers as listed in Section 2.

```
basedev=hpda.add  
basedev=aic7870.add
```

C) If you have an HP NetRAID, or if you don't have any disk array installed, verify that the following driver is present in CONFIG.SYS:

```
basedev=mraid.add  
basedev=aic7870.add
```

12. Enter the following command:

Exit

This will close command prompt session. Click OK at the GUI screen to reboot the system.

13. Congratulations! You have completed the OS/2 Warp installation. The system should reboot and start running the tutorial utility. You can start testing OS/2 and, if you are installing OS/2 Warp Connect, you are now ready to install the networking products from the CD-ROM.

Additional steps are required if you are installing Warp Server 4.0

14. Make all necessary system and network selections at this time. OS/2 installation will continue.

15. **This step is a must do for the LS, LX.** See Table 3 in "Section 2". You can skip this section for any other model by doing what the OS/2 installation program is requesting on the display and go to step 24.

PAY ATTENTION FOR THE FIRST AUTOMATIC REBOOT.

CAUTION: This is the potential problem listed in "Section 1," **Issue 6.**
After the first auto-reboot during the file and print installation section the system may stop with an error when loading drivers in CONFIG.SYS the error will read like this "Invalid path specified in line xy
c:\cid\log\instu\srvrexx.exe".

The system will reboot automatically more than once. You need to pay attention for the first automatic reboot. When the system reboots you need to observe the screen for a white box to appear at the upper left corner of the display. When you see this white box, press Alt and F1 simultaneously.

16. Press C on the menu selection to boot to the OS/2 command prompt.
17. You need to edit CONFIG.SYS with TEDIT to verify that the embedded SCSI driver BASEDEV=AIC7870.ADD is present.

Enter the following command at the command prompt:

TEDIT CONFIG.SYS

Search for the driver name:

/BASEDEV=AIC7870.ADD

It is possible that a REM command was placed in front of the driver command line. If so, delete the "REM" command. If this driver is not found with the search command, then add the following line to the end of CONFIG.SYS as described in steps 18 through 20. (First review "Consideration 1" for boot order.)

18. Press the <Esc> key until the flashing cursor is on the data lines
19. Press <Page Down> a few times to position the cursor at the end of CONFIG.SYS
20. Press the <Insert> key and then press Enter to create a blank line.

Then type in the following command line:

BASEDEV=AIC7870.ADD

21. Press F2 to save the file and F3 to exit.
22. Press Alt-Ctrl-Del simultaneously to reboot the system.
23. The system will copy many files and reboot one more time. There are no special corrections required for this last reboot. This reboot is for the networking products. The SCSI drivers should be stable in CONFIG.SYS.
24. Verify that the aic7870.add driver on the system is the one provided by Hewlett-Packard. OS/2 tends to replace the version on the diskette with the one on the CD-ROM

Open a command prompt and enter

DIR C:\AIC7870.ADD /S

Where C: is your boot drive.

Write down the size and date for this driver. Next insert the "Work Diskette 1" on drive A: and enter:

DIR A:\AIC7870.ADD

Write down the size and date. It should be the same as the file found on your boot drive. If they are not the same, please copy the one on the diskette to the boot drive by entering the following command:

COPY A:\AIC7870.ADD C:\OS2\BOOT\AIC7870.ADD

Make sure you delete the other copy of the driver if it is not on the boot:\os2\boot path.

Congratulations! You have completed the OS/2 Warp Server 4.0 installation.

Installing Warp 4.0 or Warp Server SMP 4.0

Overview for Installing Warp 4.0 and Warp Server SMP 4.0

Please read the information provided in Section 1 of this document before starting the installation.

If you are an experienced OS/2 user you can follow this overview to complete the product installation. However Hewlett-Packard recommends that you follow the detailed step-by-step process to complete the installation.

1. Create the HP Drivers/Utilities diskette using the HP Navigator CD-ROM. (See "Section 2" of this document.)
2. Install the IBM OS/2 product using one of the two procedures provided in this section.
3. Configure Networking products as needed.
4. Apply HP drivers using the Drivers/Utility Diskette.

There are two procedures that you can follow to apply HP drivers when installing Warp 4.0 and Warp Server SMP 4.0

Procedure #1: Install IBM OS/2 product using standard IBM installation process and then apply Hewlett-Packard specific drivers.

Procedure #2: Apply Hewlett-Packard specific drivers to IBM "Diskette 1" and then install IBM OS/2 product using standard IBM installation process.

The significant improvement in IBM Warp 4.0 and Warp Server SMP 4.0 is that it can be installed on any Hewlett-Packard NetServer (Warp Server SMP 4.0 can also be used on a uni-processor system) by using the IBM generic installation process without making any changes to IBM diskette 1. However, if you follow the IBM generic process it is recommended that you install the Hewlett-Packard drivers after the installation is completed.

If you experience any problems doing the generic installation process then try using the custom installation process.

Procedure #1: Install IBM OS/2 product using standard IBM installation process and then apply Hewlett-Packard specific drivers.

Phase 1: Create Copy of IBM diskettes

1. Make copies of IBM diskettes. Label the copies "Work Install Diskette", "Work Diskette 1", and for Warp 4.0 you will have a "Work Diskette 2".

Phase 2: OS/2 Start OS/2 Installation

2. Install the product using IBM standard installation procedure. Start installation of OS/2 using copy of IBM "Installation" Diskette

To begin installing OS/2 Warp 4.0 or OS/2 Warp Server 4.0 place the Installation Diskette in drive A, insert the IBM OS/2 CD-ROM and boot the system.

3. Insert "Work Diskette 1" when prompted for IBM Diskette 1. (Warp 4.0 will also ask for Diskette 2)

When you are prompted to insert Diskette 1 and press Enter, insert the copy of "Work Diskette 1" created with the Drivers/Utility diskette, then press Enter. An OS/2 logo appears, and after some time you will see a screen titled "Welcome to OS/2". Press Enter again to continue.

Select "Advanced Installation" if you want to partition your drives. Follow the prompts to create partitions as needed.

Select "Accept the drive".

NOTE: If you change the partition information, you will be prompted to reboot. In this case, repeat steps 2 and 3.

Highlight "Format Partition" when you have chosen an installation partition. Format the partition with the file system of your choice (FAT or HPFS). The system will take about 20 minutes copying files.

Phase 3: First Reboot

4. Remove the diskette as requested and Press Enter to reboot the system at the first reboot screen.
5. Complete the OS/2 Configuration screen. It is important that you select VGA for the display configuration. You can change this after the installation is complete. Select Next to continue. (If you have a NetServer E40 or Lpr, at the System configuration panel select "CD-ROM

Device Support", Select "Non-Listed IDE CD-ROM" from the list, next deselect "OTHER".

6. Complete the OS/2 setup and Installation screen. Select the options that you want. Select Next to continue.
7. Click OK on the Advanced options screen to accept "Add existing programs to the desktop".
8. Complete the Networking Product configuration.

You must configure networking products. There is no way to skip this section like in Warp Connect. However, there is a loopback Network driver available on the list which you can use if the NIC is not currently installed on the system or you can add your NIC driver at this time. (You may select no for file and print services but the system will still force you to install LAPS.)

The Warp Server SMP4.0 will ask for more configuration information than the Warp 4.0. Please check your IBM installation manual for more details on those configuration questions. The following steps are provided for guidance only. For example Warp Server for SMP will ask for:

First Name: Last Name:
Department: Company:

etc.

9. Complete configuration screen that shows a tree view of the tasks to complete. The arrows in red are must do items.
10. You must configure your adapter and the user ID. When done with the configuration panel click Install to begin the installation routine. Click OK to confirm.
11. The system will take about 25 minutes transferring files to your hard drive. You will see the screen "Updating system configuration" . When prompted select OK to install using default monitor type.

Phase 4: Networking products Auto-Reboot two times

12. System will take about 5 minutes transferring files to the hard drive. Next an auto-reboot will occur. Remember to remove the NIC driver diskette from drive A: if one was used to avoid a boot error.
13. The system will reboot with the following message:

Locked files device driver

Processing locked files

Processing complete

and so on...

14. The system will start a graphical display. More files are transferred to the hard drive. It will take about ten minutes to complete this file copy process. Next the system will auto-reboot again.
15. The system will boot to the Registration/Tutorial screen. Select close to go to the OS/2 desktop. The IBM OS/2 product is now installed.

The following steps are not required if you are using Procedure #2.

Hewlett-Packard recommends that you use the Drivers/Utilities diskette created with the HP Navigator CD-ROM to copy the drivers to c:\os2\boot subdirectory as described in the next two steps. (Where C: is the OS/2 boot driver, make a backup copy of any file before replacing or deleting it)

A) If you are using the HP NetRAID adapter, insert the Drivers/Utility diskette in drive A and type:

COPY A:\NETRAID\MRAID.ADD C:\OS2\BOOT

Where C: is the OS/2 boot drive.

B) Edit CONFIG.SYS to add the new driver and remark out IBMINT13.I13. (See "Consideration 1, in Section 1" of this document to apply the proper boot order.) These two driver lines should look as follows:

```
BASEDEV=MRAID.ADD  
REM IBMINT13.I13
```

16. If you have an HP DAC adapter, insert the Drivers/Utility diskette in drive A: and enter the following command:

COPY A:\HPDA\HPDA.ADD C:\OS2\BOOT

Where C: is the OS/2 boot drive.

A) Edit config.sys to replace the line that reads:

```
DAC960.ADD
```

with

HPDA.ADD

17. This step is not required if you are using Warp 4.0 (Merlin) or Warp Server SMP 4.0.

The IBM bundled driver passed all Hewlett Packard tests. You can use the HP SCSI driver aic7870.add if you suspect any issues with the IBM driver. Next, apply the HP version of the AIC7870.ADD driver. Insert the Drivers/Utility diskette in drive A. Enter the following commands:

C:

Where C: is your boot driver.

```
CD \OS2\BOOT
COPY AIC7870.ADD AIC7870.IBM
COPY A:\7800\AIC7800.ADD C:
```

18. Shutdown and reboot the system to activate the new drivers.

Procedure #2: Apply Hewlett-Packard specific drivers to IBM "Diskette 1" and then Install IBM OS/2 product using standard IBM installation process.

Please read the information provided in Section 1 of this document before starting the installation.

The fundamental difference between Procedure #1 and #2 is at what point the Hewlett-Packard drivers are applied. Procedure #1 adds those drivers after the installation is completed. Procedure #2 adds the Hewlett-Packard disk array driver to the copy of IBM "Diskette 1" called "Work Diskette 1" before the installation starts. Please note that this procedure is still using the IBM version of AIC7870.ADD driver to complete the installation. You can replace the AIC7870.ADD to the one that applies to your system.

Phase 1: Create copy of IBM "Diskette 1" label it "Work Diskette 1"

1. Create the Drivers/Utilities diskette using the HP Navigator CD-ROM (see "Section 2" of this document).
2. Create a copy of IBM "Diskette 1" and label it "Work Diskette 1".

Use a spare PC running DOS, OS/2 or NT to make a copy of the original IBM Diskette 1. It is recommended that you label this copy "Work Diskette 1".

Insert IBM "Diskette 1" in drive A and enter the following command:

```
DISKCOPY A: A:
```

Phase 2: On "Work Diskette 1" update CONFIG.SYS and copy new drivers

3. Edit CONFIG.SYS on "Work Diskette 1" to add the HP SCSI and driver for disk array adapter if one is present.

Use a spare PC running DOS, OS/2 or NT to complete the following tasks. Please read "Consideration 1" in Section 1 of this document and complete the table in that section before you proceed with this step.

A) If you have an HP DAC, find the lines that read:

```
basedev=dac960.add  
basedev=ibmls506.add  
basedev=aic7870.add
```

Remark them out with the REM command as follows: (Note that this step is done to avoid boot order issues. See "Consideration 1" in Section 1 for details.)

```
rem basedev=dac960.add  
rem basedev=ibmls506  
rem basedev=aic7870.add
```

Add three lines to the start of CONFIG.SYS as follows:

```
basedev=ibmls506.add  
basedev=hpda.add  
basedev=aic7870.add
```

B) If you have an HP NetRAID, replace the lines that read:

```
basedev=ibmls506.add  
basedev=aic7870.add
```

with:

```
rem basedev=ibmls506  
rem basedev=aic7870.add
```

Add three lines to the start of CONFIG.SYS as follows:

```
basedev=ibmls506.add  
basedev=mraid.add  
basedev=aic7870.add
```

C) While editing CONFIG.SYS, locate and delete any lines that look like the one's you've added which are calling the same drivers. You don't want duplicate driver names. This can cause Trap 00D or Trap 00E during the OS/2 boot process.

D) While editing CONFIG.SYS on the "Work Diskette 1". Locate the section with all the

IBM type 2 drivers, as follows:

```
basedev=ibm2flpy.add  
basedev=ibm2adsk.add  
basedev=ibm2scsi.add
```

Remark out those driver lines using the REM command, since they are not needed, so that they read as follows...

```
REM basedev=ibm2flpy.add  
REM basedev=ibm2adsk.add  
REM basedev=ibm2scsi.add
```

E) While editing the CONFIG.SYS file, locate the Adaptec drivers section with the following Adaptec driver lines:

```
basedev=aha154x.add  
basedev=aha164x.add  
basedev=aha174x.add
```

Remark out these lines by adding the REM command so they read as follows...(make sure you have no need for any of these drivers before implementing this step).

```
rem basedev=aha154x.add  
rem basedev=aha164x.add  
rem basedev=aha174x.add
```

4. Copy required drivers to "Work Diskette 1" use a spare PC running DOS, OS/2, or NT to complete the following tasks:

A) Create a temporary directory on the hard disk of the workstation you are using, by entering (if you created the C:\HPTEMP directory in step 13 of "Section 2" then skip the MD HPTEMP command):

```
C:  
MD HPTEMP  
CD HPTEMP
```

B) Insert the "Drivers/Utilities" diskette in drive A of the workstation, and enter the following copy commands:

```
COPY A:\7800\AIC7870.ADD  
COPY A:\7700\AIC7770.ADD  
COPY A:\HPDA\HPDA.ADD  
COPY A:\NETRAID\MRAID.ADD
```

COPY A:\UPDATE.EXE

C) Remove the Drivers Diskette from drive A, and insert the "Work Diskette 1". You must next delete some files to make room on "Work Diskette 1" for new drivers by entering the following commands:

**DEL IBM2FLPY.ADD
DEL IBM2ADSK.ADD
DEL IBM2SCSI.ADD
DEL AHA*.ADD**

Copy new drivers to "Work Diskette 1" by entering the command:

COPY *.* A:

You may delete all the files in the C:\HPTEMP directory and also delete the C:\TEMP directory.

Now you are ready to implement the steps listed in Procedure #1: Install IBM OS/2 product using standard IBM installation process and then apply Hewlett-Packard specific drivers.

Section 4. Installing Hewlett-Packard NIC's

The following section will help you get a Hewlett-Packard LAN adapter installed on an HP NetServer running OS/2.

Installing OS/2 LAN Services for use with the HP J2973A or J2970A 10BaseT PCI LAN Adapter (CD-ROM)

This network adapter is included with the HP NetServer LC Plus.

If you are installing OS/2 LAN Server 4.0 or OS/2 Warp Server's File and Print services on a system equipped with the HP J2973A 10BaseT adapter, you will need to add the device driver for the J2973A adapter to your system's configuration. This driver may be added during the installation of LAN Server, or it may be added later via the OS/2 LAN Services Installation/Configuration utility. This utility can be started from its icon in the IBM LAN Services folder in LAN Server 4.0, or from the LAN Services File and Print folder in OS/2 Warp Server.

The following steps assume that you are familiar with OS/2 LAN Services installation. For more information about OS/2 LAN Services, refer to the "Easy Start" and "Up and Running!" manuals that accompany OS/2 LAN Server or OS/2 Warp Server.

1. Once you begin the installation/configuration of OS/2 LAN Server, or OS/2 Warp Server File and Print services, you will answer a series of questions. At the "Easy or Tailored Installation/ Configuration" window, select "Tailored", then select "Install or configure this

workstation".

2. Continue answering the question prompts in a manner appropriate to your system until you reach the "LAPS Configuration" window.
3. Place the Drivers Diskette in Drive A and select "Other adapters..."
4. At the "Path" prompt, enter...

A:\NICDRV

This step copies the device driver from the Drivers Diskette to the hard drive and then returns you to the "LAPS Configuration" window.

5. Scroll the "Network Adapters" list box down until you see the entry "HP DeskDirect 10/100 PCI LAN Adapters". Select this entry, then select the "Add" button beneath the list box. This entry will be copied to the "Current Configuration" list box.
6. In the "Protocols" list box, select a network protocol to be used for the server, and select the "Add" button beneath the list box. This entry will be copied to the "Current Configuration" list box, beneath "HP DeskDirect 10/100 PCI LAN Adapters". Select additional protocols in the same manner, as needed.

NOTE: To optionally edit the driver's configuration, highlight the "HP 10BaseT PCI LAN Adapter" line in the "Current Configuration" list and select "Edit".

7. Save these settings and continue following the prompts to finish installing LAN Services. In the remaining screens you will have the opportunity to choose IBM's default configuration settings, which work well for the HP J2973A 10BaseT adapter.
8. When you are finished configuring LAN Services, you will be instructed to reboot the system. Once you have done so, OS/2 LAN Server is ready for use. If you encounter problems recognizing the network, boot DOS and run the HPVGSET utility from the Navigator CD-ROM see TIP 10 for instructions on running this utility. (This utility used to be provided on the OS/2 Drivers Diskette). Follow the instructions in the "Setting Up Your Card and LAN Connection" chapter of the Installation Guide.

NOTE: The device driver for the HP J2973A 10BaseT Ethernet adapter also works for the HP J2585B 10BaseT/100BaseVG Ethernet adapter. The above set of instructions can be used to configure either the J2973A or the J2585B.

Installing LAPS Separately

If you are installing OS/2 LAN Services Prior to Version 4.0, you may choose to install and configure IBM's LAN Adapter and Protocol Support (LAPS) program first, and then install OS/2 LAN Server or OS/2 LAN Requester. Most versions of OS/2 LAN Server and OS/2 LAN Requester will recognize the LAPS settings and will be able to make use of the HP J2973A

adapter.

1. Boot OS/2 and install the IBM LAPS program. To install LAPS, place the IBM LAPS (LAN Adapter and Protocol Support) disk in Drive A. Open an OS/2 Fullscreen session, and enter:

A:\LAPS

2. When the LAPS main dialog box appears, select the "INSTALL" button, and follow the prompts to install LAPS. When installation is complete, you will be back at the LAPS main dialog box. Remove the LAPS floppy from Drive A. Do not exit LAPS.
3. Select the "INSTALL" button again. Place the Drivers Diskette in Drive A. When prompted, enter the path to the HP NDIS drivers...

A:\NICDRV

and select "OK". The LAPS program will copy the appropriate files from the Drivers Diskette and return to the main dialog box.

4. Select "Configure" from the LAPS main dialog box.
5. Choose the "Configure LAN Transport" button in the Configuration dialog box, and select "Continue".
6. Highlight the "HP 10BaseT PCI LAN Adapter" line from the list in the "Configure Workstation" dialog box. Select "Add" to copy this entry to the "Current Configuration" list box.
7. Highlight the desired protocols in the "Protocols" list box and select "Add" to copy them to the "Current Configuration" list box.

NOTE: To optionally edit the driver's configuration, highlight the "HP 10BaseT PCI LAN Adapter" line in the "Current Configuration" list and select "Edit".

8. Select "OK" once all the configuration has been completed. The configuration will be saved.
9. Select "Exit" from the LAPS main dialog box. Follow the instructions on the screen or refer to the "LAPS Installation Guide" to complete the installation of LAPS. The LAPS program will update the CONFIG.SYS file on the hard drive. You will be returned to the OS/2 command prompt.
10. Install OS/2 LAN Server. Refer to the installation guide for OS/2 LAN Server to complete the rest of LAN Server installation.
11. Reboot the computer. OS/2 LAN Server is ready for use.

NOTE: If your system does not appear to be connected to the network, shutdown the

system and verify that the HP 10BaseT adapter is firmly mounted in its slot and that the Ethernet cable is also connected firmly. If the physical connection is working, the green light on the back of the adapter will come on when you power up the system.

NOTE: OS/2 2.X requires an IBM service pack. IBM OS/2 2.0, 2.1, and 2.11 need a new version of the OS2LDR module to allow drivers to register shared interrupts. This is documented in IBM APAR PJ14230. Contact IBM to order a service pack to update the OS2LDR module. This patch is also required for OS/2 2.11 SMP prior to version S.629.

HP J3171A/D5013A PCI Ethernet Adapters

This network adapter is included with the HP NetServers LD Pro, LC II and HP NetServer E 45.

The Network Driver Interface Specification (NDIS) 2.x is a specification for NIC (network interface card) drivers used by many OS/2 networking products to gain access to the LAN. For instance, the OS/2 Warp Server and OS/2 LAN Server products use the HP NDIS 2.x driver when you configure a network server to communicate via the IBM OS/2 NETBIOS protocol.

The HP NDIS 2.x driver is self-configuring, which means that the driver will automatically locate and read the J3171A/D5013A adapter configuration. Only the DRIVERNAME parameter needs to be present under the [HPTX_NIF] section in the PROTOCOL.INI file.

The HP NDIS 2.x driver hptx.os2 for IBM LAN Services OS/2 servers and requesters is located on the Drivers Diskette for OS/2, which can be generated by the HP NetServer Navigator CD. The IBM OS/2 LAN Server, OS/2 Warp Server, and OS/2 Warp Connect products also require the unique NIF file, hptxos2.nif.

Location of files on the drivers diskette:

\NICDRV\HPTX.OS2

\NICDRV\HPOS2.NIF

If you did not create an OS/2 drivers diskette, you can find the above LAN adapter drivers and supporting files in the \PERIPH\NICDRV\OS2\D5013 subdirectory of the HP NetServer Navigator CD. Also you can use the Navigator diskette library to create a driver diskette which contains OS/2 ODI drivers plus other NOS drivers for the D5013.

Sample configuration file

PROTOCOL.INI will include:

```
[HPTX_NIF]
DriverName = HPTX$
```

General installation - LAN Server and OS/2 Requester (4.0 or 3.0)

1. Run the MPTS utility with LAN Server 4.0 or OS/2 Requester 4.0 (Run the LAPS utility with LAN Server 3.0 or OS/2 Requester 3.0)

2. Click Install.
3. When prompted, insert the HP Support disk in a floppy drive, specify A:\NICDRV for driver location, and click OK.
4. When Install reads the hptxeo2.NIF, installation is complete. Click OK. The adapter driver has been copied to your system.
5. Click Configure from the MPTS window.
6. At the Configure window, make sure the LAN adapters and protocols button is on and click CONFIGURE.
7. At the LAPS Configuration window, select the HP 10/100TX adapter (OS/2 driver: hptx.os2) from the Network Adapters window.

Click Add in the Network Adapter window to add the HP 10/100TX adapter to the current configuration.

8. Select your desired Protocol(s) from the Protocol window and click Add from this window to add the protocol(s) to the current configuration.
9. Click OK when you're done and follow the prompts to exit MPTS. Your CONFIG.SYS is automatically updated.

Shutdown and reset your system so the changes can take effect.

Advanced Settings

You get to the advanced settings in LAPS by selecting the driver added to the configuration windows and then clicking edit. You will get a panel to enter the following configuration parameters:

Media Speed:

Force Duplex Mode:

Slot/Device Identifier:

SPEED: The parameter disables Auto-Speed Detect and causes the adapter to function at the speed indicated. If the FORCEDUPLEX parameter is assigned to either 1 or 2, the SPEED parameter is required because auto-speed sensing is disabled if the duplex mode is forced. Auto-negotiate devices cannot detect speed changes in this configuration until the driver is reloaded. (Options for this parameters are [Auto / 10 / 100]) [Example: SPEED=100]

FORCEDUPLEX: This parameter disables Auto-Negotiate capability and forces the adapter to operate in Half or Full Duplex mode. The SPEED parameter must be specified and must be valid if the default of Auto-negotiate is changed. Options for FORCEDUPLEX are Auto (for auto-

negotiate), 1 (for half), 2 (for full). [Example: FORCEDUPLEX = 2]

SLOT: (required for multiple adapters, see TIP 9 in section one for instruction on obtaining the slot number) This parameter is optional if only one adapter is present. If it is specified but is incorrect, a message indicates that the value doesn't match the configuration but the driver finds the adapter and loads anyway.

This parameter is required if more than one adapter is present in either one bus or multiple PCI buses of a system. The parameter tells the driver which adapter it controls. The SLOT number is the encoded value of the PCI adapter's device location. To determine the slot number, load the driver with only the DRIVERNAME parameter specified. The driver reports all the slots that have PCI adapter(s) installed. You can determine which card is in which slot by using SETUP.EXE (if you need to run this utility, you must create a J3171A/D5013A driver diskette from the Navigator diskette library section.) and matching the Ethernet addresses of the adapter to the device number specified in View Configuration.

[Example: SLOT=0x1C]

Alternate procedure to obtain the slot number:

1. Complete the configuration process but leave the slot field blank for each driver
2. Restart the system and record the list of slots that each driver displays
3. Complete the configuration by assigning one of the values from the list (without the 'ox') to the Slot parameter of each driver. Leave the field blank if you only have one adapter installed.

Installing High Resolution Video Driver on a NetServer E 30, E 40, E 45

Note: It is critical that your system be set to VGA mode before starting this procedure. If you just installed the system using the procedure listed above then the system should be already set to VGA mode. Otherwise check your OS/2 manual on how to set the display to VGA.

The video diskette contains a readme.txt file that you can print to use it as a reference documentation. You may want to look at that reference if you want to install many systems using a automatic script to install the video driver.

1. Insert the Cirrus Logic diskette into drive A:
2. Select the Diskette object on the launch pad to open the Drive A:
3. Double click on Install.exe.
4. Select "Install" from the Cirrus Logic Install Program. The display will show:

Unpacking: filename...

5. Select OK to let Install identify your graphics hardware and memory configuration.

6. Select "Yes" to change your display driver settings.
7. Select a screen resolution and close System Settings dialog box.
8. Select test to check the new resolution
9. Select yes to "Do you wish to retain these selections?"
10. Close the "System - Setting " configuration book
11. Close down Drive A - Icon View.
12. Remove the diskette from Drive A:
13. Shut down and reboot the system.

NOTE: If video memory size is changed in a system, the user must re-install Cirrus drivers (by re-installing VGA drivers first, then the Cirrus drivers). You can change the refresh rate from 56hz to 60 hz by opening the System folder and double click on the system object. Select 60hz and click on Test. Select Yes to save the change. The system is now running at 60 hz.

Installing High Resolution Video Driver on a NetServer E 60

The NetServer E 60 uses an ATI Rage Iic AGP adapter. You need to create two video driver's diskettes using the Navigator CD-ROM.

Diskette 1 provides the ATI utilities needed to identify your monitor capabilities and creates a data file used by the driver to allow you for choices to change the resolution and refresh rates.

Diskette 2 provides the actual video driver files.

Please follow the instructions provided on the readme.txt on video driver's diskette 1 to complete the video driver installation.

Section 5. On-Line Information and Software Sources

IBM OS/2 BBS: 919-517-0001 (14,400 BPS)

Microsoft Software BBS: 206-936-6735 (14,400 BPS)

HP Internet (World-Wide-Web) site: www.hp.com/netserver

HP Support FTP site: <ftp://ftp.hp.com/pub/servers/>

HP NetServer Online Documentation CD (included with your system): includes all NetServer documentation online